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LETTER AND RESTORATION ADVISORY BOARD (RAB) COMMENTS REGARDING WORK PLAN FOR REMOVAL ACTION MUNITIONS RESPONSE SITE 2 FIRE TRAINING AREA
NWIRP CALVERTON NY
3/8/2012
RESTORATION ADVISORY BOARD (RAB)

Memorandum For: **Bill Gunther**
Calverton NWIRP Restoration Advisory Board (RAB)

From: **Frank S. Anastasi, P.G.**
RAB Technical Advisor

Date: **March 8, 2012**

Subject: **Review of Work Plan for Munitions Response Site 2 (Fire Training Area), Removal Action and Munitions Response**

Introduction

This memorandum summarizes my review of the Navy's *Draft Final Remedial Work Plan, Munitions Response Site 2 (Fire Training Area) Removal Action and Munitions Response*, issued January, 2012 and prepared by the Navy's contractor AGVIQ-CH2MHill. This project is part of the Calverton Naval Weapons Industrial Reserve Plant (NWIRP) environmental restoration activity conducted by the Navy after closure of this facility at Calverton, NY.

The Fire Training Area was designated Site 2 in the environmental baseline survey of the facility in the 1990s. Contaminated soil was identified and delineated in subsequent investigations. In 2009, shallow petroleum-contaminated soil was removed from the site. A small amount of surficial material described as "coal/gravel road base" and contaminated with polychlorinated biphenyls (PCBs) was also removed as part of that action.

Two Navy reports documented the previous Site 2 soil removal project: *Project Close-Out Report* prepared by Sovereign Consulting in September 2009; and *Construction Oversight and Confirmation Sampling Report* prepared in May 2010 by Tetra Tech NUS, Inc. The reader is referred to my April 20 and May 21, 2010 review memoranda that summarized the removal action and finding that additional soil removal would be required.

Description of Site 2 and Summary of Previous Actions

The former Fire Training Area consisted of a shallow, 80-foot diameter concrete pit situated in the southeastern corner of a nine-acre clearing located in the south-central portion of the former Calverton NWIRP. Fire training activities had been conducted there as early as the mid-1950s. Oil would be spread and ignited to simulate occurrences that personnel might have to respond to in the line of duty. The concrete pit reportedly was installed around 1982. Multiple spills from storage tanks reportedly occurred as late as 1983. Oil used at the site and spilled from the tanks contaminated the soil. Previous

remediation efforts at Site 2 included removal of tanks and soil, operation of a soil vapor extraction and air sparging system, and recovery of liquid petroleum from the subsurface.

2009 Soil Removal

Residual contamination by petroleum hydrocarbons was the subject of the removal action that was completed in 2009 (with off-site disposal). The removal action was planned to remove "shallow" contaminated soil, with the understanding that deeper contaminated soil would be left in place. Black-stained sand that exhibited an oily odor and was easily distinguished from underlying brown/tan sand was removed to a depth of about five feet below ground surface (bgs). Approximately 10,862 tons of soil was transported from Site 2 and disposed off-site. Nine metal drums were also encountered and removed; one drum held about five gallons of oily water and several of the drums contained tar-like solids.

The Construction Oversight and Confirmation Sampling report documented the project. Confirmation soil sampling and analysis during and after excavations indicated that most of the area had been remediated adequately. Additional sampling and analysis defined a small area of residual contaminated soil that was inaccessible when the removal action project was conducted due to the presence of a construction road and field office trailer.

Soil cleanup levels were the New York State Department of Environmental Conservation (NYSDEC) Part 375 criteria for certain petroleum contaminants (known as polycyclic aromatic hydrocarbons, or PAHs), including Site 2 chemicals of concern such as benzo(a)pyrene (BAP) and dibenzo(a,h)anthracene (DBA).

Residual Petroleum-contaminated Soil Left for Future Removal

The residual soil contamination area where the haul road and construction trailer had been located was estimated to contain about 60 cy of black-stained sand in the shallow subsurface, with contaminant levels above the Part 375 criteria levels. Maximum reported BAP and DBA levels were 1,900 ppb and 440 ppb, respectively. Benzo(a)fluoranthene, BAP, and chrysene were reported at up to 2,400 ppb, 1,900 ppb, and 1,900 ppb, respectively. [That soil will be removed in the proposed project, along with the munitions-debris contaminated soil. NYSDEC Part 375 criteria will be the cleanup levels.]

Discovery of Munitions at Site 2

Several 20-millimeter projectile fragments were found on the ground surface in February 2010 during soil sampling to delineate the residual petroleum-contaminated soil that still required removal. The discovery of munitions debris triggered performance of a digital geophysical mapping (DGM) survey over the entire Site 2 area to look for more munitions debris. The survey identified several locations of individual potential subsurface munitions debris, and three other areas referred to as "saturated anomalies" indicating many potential munitions debris fragments buried in the subsurface. So, a

complex military munitions- response action has been planned around what was expected to be a straightforward removal of a small quantity of petroleum-contaminated soil.

Potential Source of Munitions Debris

The Work Plan discusses the historical airplane-mounted weapons (20-millimeter cannons) being test-fired and target practice taking place at a "firing stop butt area." The stop butt area reportedly was a wood-lined, sand-filled revetment approximately 50 feet (ft.) by 50 ft. by 20 ft. high. The Work Plan states that the stop butt was removed after the Calverton plant shut down, but it does not state that the structure (and munitions debris held within it) was disposed at Site 2. It appears, however, that this is one possible explanation for the source of the munitions debris, especially the "saturated anomalies" that the DGM survey detected at Site 2.

Planned Munitions Response and Soil Removal Project

The Work Plan states that the following objectives will be accomplished:

- Investigation of potential munitions and explosives of concern (MEC) and materials potentially presenting an explosive hazard (MPPEH);
- MEC and MPPEH removal and proper disposal;
- Petroleum-contaminated soil removal; and
- Site restoration.

According to the project schedule, the field work was planned to begin with utility clearance activity on March 26, 2012. The schedule has been pushed back somewhat, however, and now March 26 is the deadline for regulatory-agency review comments to be given to NAVFAC. Based on the schedule, the field work is expected to be completed within about four months. The work will be performed five days per week, Monday-Friday, from 7:00 a.m. to 4:00 p.m. A construction close-out report would be prepared and finalized over an additional two months. Based on that schedule, if field work commences by May or June, the project should be completed by the end of 2012.

The Work Plan consists of a Project Execution Plan (with extensive munitions-response related requirements), Sampling and Analysis Plan, Environmental Protection Plan, Waste Management Plan, Accident Prevention Plan, Stormwater Pollution Prevention Plan, Quality Control Plan, Explosives Safety Submission (ESS), and Munitions Response Standard Operating Procedures. All work will be carried out in accordance with Navy and New York State Department of Environmental Control (NYSDEC) requirements.

In addition to obtaining utility clearance from New York One Call Center, a third-party utility survey will be conducted to detect any private buried utilities and determine if any are energized. A land survey will be performed to locate the excavation-area boundaries, MEC and MPPEH locations, and to establish a 30-meter square grid across the munitions

excavation areas. Silt fence will be installed to prevent soil erosion and surface water transport of sediment during construction activities.

The main steps of the field work involved in the project are summarized below.

1. Utility clearance, land survey, and silt fence installation.
2. Site preparation, including clearing existing soil and debris piles and vegetation.
3. Manual excavation of individual MEC/MPPEH locations and post-removal verification.
4. Mechanical excavation of the "saturated anomalies" (GPM polygons) and soil screening to remove munitions fragments from excavated soil.
5. Excavation of petroleum-contaminated soil, screening for contaminants, and segregation for either off-site disposal or on-site reuse.
6. Post-excavation sampling in petroleum-soil excavation to verify meeting cleanup levels.
7. Spreading of Oxygen Releasing Compound in petroleum-soil excavation.
8. Backfilling, re-grading, and restoration of all disturbed areas.

Attached figures from the Work Plan show the features of the site and the areas where the residual the munitions debris- and petroleum-contaminated soil will be excavated.

Munitions and Potentially Explosive Materials Removal

The munitions debris excavation activities will be performed first. An exclusion zone will be established to encompass the areas of munitions debris excavations with an appropriate buffer zone around them. Separate holding areas will be established for debris having potential explosion hazards (MPPEH), and debris determined to be safe (termed materials documented as safe, or MDAS).

Navy-specified safety and personnel protection procedures required for munitions response actions will be followed at all times. Preliminary site preparation activities will be supported by two unexploded ordnance (UXO) technicians. If MEC/MPPEH is encountered during site prep, NAVFAC will be alerted and appropriate explosive ordnance disposal (EOD) response will be conducted.

Detailed descriptions of the manual and mechanical munitions debris excavation techniques to be used in the project are contained in the Work Plan (Section 2.1.3. and 2.1.4). The material excavated from the munitions areas will be mechanically processed by a screening plant that will have been mobilized to the site. Material sized greater than ¾-inch will be placed in piles on the ground at the screening plant and examined by UXO personnel.

MEC/MPPEH, rocks, and debris larger than 20 mm in diameter will be removed for disposal. MEC/MPPEH will be classified, stored, transported, and disposed according to approved plans and specifications contained in Appendix D (the Explosives Safety

Submission, or ESS). Section 2.1.5 of the Work Plan explains the detailed, systematic approach that will be used to manage the MEC/MPPEH.

After all munitions-debris contaminated soil has been removed, the excavations will be backfilled with approved material and the site will be restored.

Petroleum-contaminated Soil Removal

The petroleum soil excavation will be performed after the munitions removal is completed. An exclusion zone will also be established for the petroleum-soil excavation activities. A hazard reduction zone will encircle the exclusion zone. Decontamination support equipment, wash stations, and authorized support personnel will be staged in the reduction zone.

Detailed descriptions of the petroleum-soil excavation techniques are contained in the Work Plan (Section 2.1.7). Soil will be excavated to a depth of four ft. Approximately 400 cy of soil is estimated to be removed. Excavated soil will be segregated based on field screening (odor, staining, photoionization detector (PID) readings) for either potential on-site reuse or off-site disposal. Based on site data and experience with the 2009 removal action, the contaminated soil will likely be within the one to three ft. depth zone and readily identified by visual observation and odor.

After the excavations reach four ft. depth, 12 confirmation samples collected from the sidewalls and floor of the excavation will be analyzed for PAHs and PCBs and compared to the cleanup levels set for the project (meeting NYSDEC Part 375 criteria). The analytical results will be used to determine if additional excavation is necessary (if so, additional confirmation samples will be necessary). Soils that were segregated for re-use (backfill) will be sampled for laboratory analyses of SVOCs and PCBs, and compared to the remediation goals before approval for reuse. Table 3-2 in the Work Plan shows the remediation goals for the project.

After all petroleum-contaminated soil is excavated, an estimated 185 pounds of dry calcium peroxide will be spread across the base of the excavation and hydrated to provide a source of oxygen to promote breakdown of residual petroleum hydrocarbons. Then the excavation will be backfilled with approved material and the site will be restored.

Contaminated Material Disposal

Contaminated soil, other solid wastes, and liquids generated in decontamination processes will be disposed off-site at a licensed facility. The soil that is segregated for off-site disposal will be sampled for of waste-characterization testing. Laboratory analyses for hazardous waste parameters (TCLP metals, VOCs, SVOCs, pesticides, herbicides, PCBs, petroleum hydrocarbons, and ignitability/corrosivity/reactivity) will be used to determine appropriate disposal. Munitions debris will be transported and disposed off-site in accordance with established Navy procedures and NYSDEC

requirements. Loading, transportation and disposal of all material removed from the site will be documented on waste manifests.

Project Documentation

The contractor will prepare a construction completion report to document the work performed and results achieved. The report should include copies of daily field reports, test results, and waste management documentation (such as manifests). Although not stated in the report, one would expect as-built drawings of the excavations to be included. The project schedule indicates that a final report should be completed within about two months after field work ends.

Comments and Opinions

- This project is more complex, and potentially important, than I expected. I did not realize the extent of the (probable) munitions-debris contaminated area until I saw the Work Plan (Figures 2-2 and Appendix E DGM survey mapping results). The munitions excavation areas appear to equal more than five times the previous petroleum-soil removal area. Manual excavation and removal of munitions debris will be done over a large area as well (Figure 4-4).

- The Work Plan appears to contain all required information and adequate details about the work, especially the munitions response activities. The appendices include associated required plans (such asthe ESS), the DGM Survey anomaly figure, and standard operating procedures for the munitions response activities. While munitions response is beyond my area of expertise, the Navy has rigorous standards for planning and performing munitions removals, and it appears that the proper guidance has been used. All munitions related work will be undertaken and/or overseen by qualified UXO personnel.

- It would be informative to have a more thorough description of the 20-mm cannon test firing and target practice at the former stop butt area, and to identify where the stop butt was located. If the Navy believes that is the source of the munitions debris at Site 2, this finding could be stated clearly, rather than alluding to it but leaving it an open question.

- There is some ambiguity in the Work Plan about the analyses of petroleum-soil excavation confirmation samples. Table 3-2 and portions of the text in Section 3.3.2 and 3.3.3 indicate that the samples will be analyzed for PAHs and PCBs. Detailed procedures for collecting samples for VOCs, however, are presented also in the text of those sections. This apparent contradiction should be resolved.

- The Work Plan indicates that only one sample of material segregated for potential reuse, and one sample of material segregated for off-site disposal, will be analyzed for contaminants (Table 3-2). Depending upon the volume and variability of each of these material piles, one or more additional samples might better characterize them.

- The sampling QA/QC procedures and protocols appear adequate to ensure that the petroleum-contaminated soil removal accomplishes the intended goal – to remove accessible, highly contaminated soil above the water table. It is helpful that the target material is readily identified by sight and odor, based on the previous Site 2 soil removal action. Field screening for SVOCs with a PID is not as accurate as using one for VOCs.

- The project schedule should be updated to reflect the Navy's current plans.

- I expect that the Navy will properly inform the community before field work begins, and keep it informed of progress, due to potential concern about UXO projects in general, and the likely traffic impacts from trucks hauling materials from the site.

- I am looking forward to reviewing the results of the 2011 ground water monitoring program from wells in the Site 2 vicinity to see what impact, if any, the previous soil removal project may have had on ground water quality. Also, results from additional sampling at temporary wells and/or hydropunch borings located in the vicinity of Site 2 will be of interest. I hope this information will be available before the upcoming RAB meeting (April 5).

Next Steps

The Navy has asked reviewers for comments on the Work Plan by March 26. I am not aware of any comments that NYSDEC or the county health department may have on the Work Plan. I will let you know if I learn of any such comments or concerns.

I hope this memorandum is helpful to the RAB in understanding the project. If you have any questions, or wish to discuss any aspects of this issue, feel free to contact me, or we can discuss it at the April 5 RAB meeting. I look forward to seeing you and the other RAB members there.

CH2M HILL

NO.	DATE	DESCRIPTION	BY	APVR
				N

APVD | CHK | DR | DSGN

NAVFAC

REMEDIAL WORK PLAN
MUNITIONS RESPONSE SITE 02
REMOVAL ACTION AND MUNITIONS RESPONSE
(FIRE TRAINING AREA)

FIGURE 2-2
EXCAVATION AREAS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"

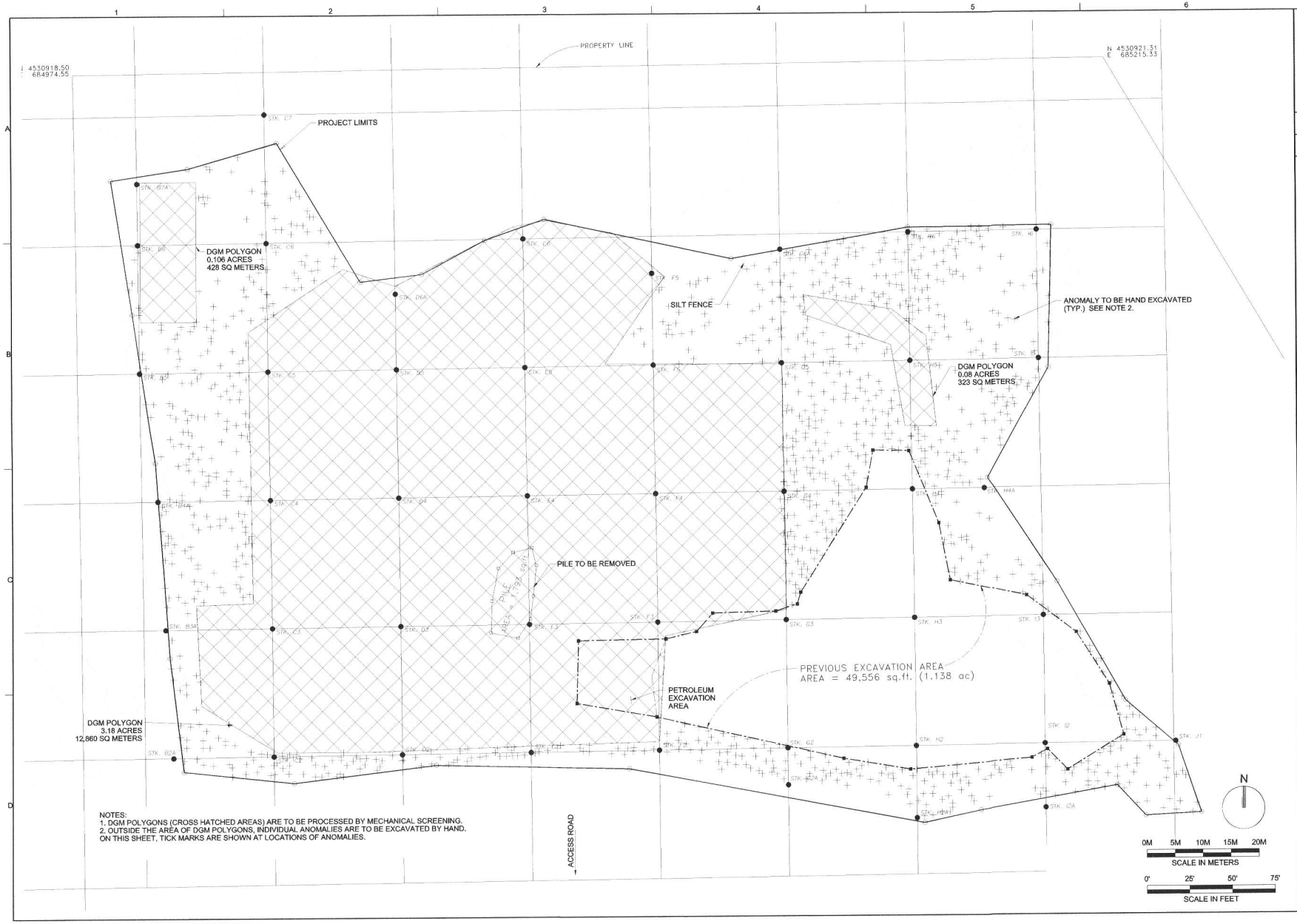
DATE SEPTEMBER 2011
PROJ 378092
DWG
SHEET

N

0M 5M 10M 15M 20M
SCALE IN METERS

0' 25' 50' 75'
SCALE IN FEET

DGM POLYGON 3
PREVIOUS EXCAVATION AREA
CONTAMINATED SOIL STOCKPILE
SUPPORT AREA
ACCESS ROAD
CONCRETE PILE
SOIL SCREENING/SIFTING OPERATORS
PETROLEUM EXCAVATION AREA
PROJECT LIMITS
DGM POLYGON 1
DGM POLYGON 2



NOTES:
1. DGM POLYGONS (CROSS HATCHED AREAS) ARE TO BE PROCESSED BY MECHANICAL SCREENING.
2. OUTSIDE THE AREA OF DGM POLYGONS, INDIVIDUAL ANOMALIES ARE TO BE EXCAVATED BY HAND.
ON THIS SHEET, TICK MARKS ARE SHOWN AT LOCATIONS OF ANOMALIES.

AGVIO
CH2M HILL

NO.	DATE	DESCRIPTION	BY	APVD
			APVR	N
				APVD
NO.	DATE	REVISION	DR	APVD
DSGN		CHK		

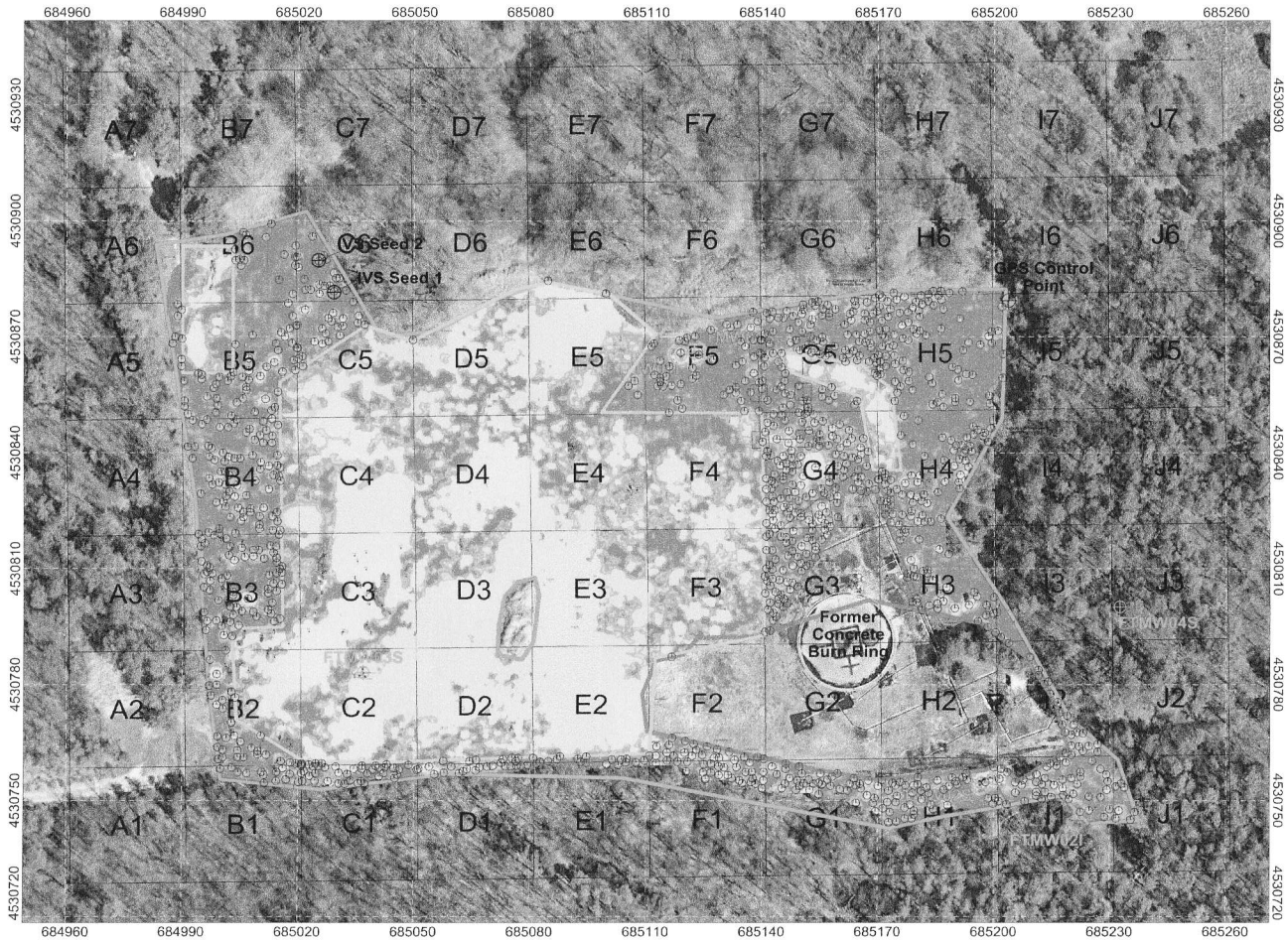
DRAFT REMEDIAL ACTION WORK PLAN MUNITIONS RESPONSE SITE 2
SITE 2 FIRE TRAINING AREA
NAVAL WEAPON INDUSTRIAL RESERVE PLANT, CALVERTON
CALVERTON, NEW YORK

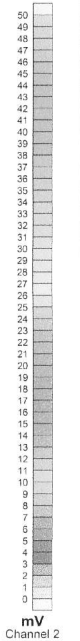
NAVFAC

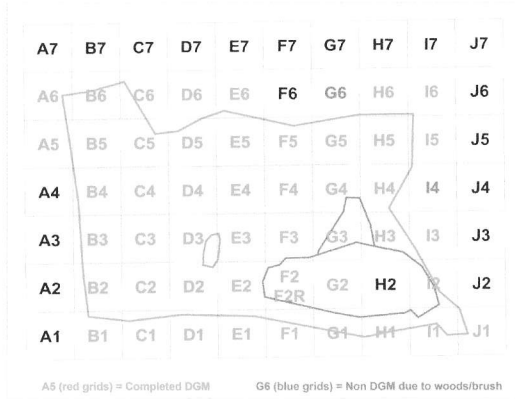
SITE
LAYOUT AND EXCAVATION PLAN
FIGURE 4-4

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2011
PROJ	378092
DWG	EC-4
SHEET	4 OF 6







Legend

- A1 — Grid Boundary (30m x 30m)
- FTMW03S — Monitor Well
- metal — Culture, if noted
- Area of Investigation
- Previous Excavation Area (No DGM)
- Mound / Pile (No DGM)
- Mechanical Excavation/Sifting Polygons
- Anomaly Identified for Intrusive Investigation

20 0 20 40 60
(meters)
NAD83 / UTM zone 16N

AGVIQ - CH2M HILL

EM61-MK2 Digital Geophysical Mapping Results
Mosaic
Site 2 - Fire Training Area
Former Naval Weapon Industrial Reserve Plant
Calverton, New York

Date of Survey: 11/16/2010 - 11/21/2010
Date of Map Creation: 9/8/2011